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# NURSING IN MISSION STATIONS



[This department has a two-fold purpose,—to keep nurses in this country in touch with the work of missionary nurses, and to put missionary nurses in touch with each other, for an interchange of ideas, questions, and suggestions. All nurses engaged in mission work, of every creed and country, are invited to contribute to its columns.]

## SCHISTOSOMUM JAPONICUM

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WITHIN the last few years a new animal parasite of man has been recognized more and more frequently as the cause of certain definite symptoms heretofore of obscure origin. The *Schistosomum japonicum* was first isolated by Dr. Katsurada in Japan in 1904, and has since been found in various parts of Japan, China, and the Philippine Islands. The worm is 10 mm. to 12 mm. in length, and is found in the blood-vessels of the portal system, especially in the mesenteric vessels. The eggs are found in the liver, lymphatic glands, and intestinal submucosa, often in enormous numbers, especially in the vermiform appendix. They may also sometimes be found in the lungs and brain. They are expelled in the fæces.

The clinical symptoms produced by these parasites are at first somewhat like those of malaria—chills, fever, general lassitude and apathy, and enlargement of the spleen and liver. Later come anæmia, diarrhoea with mucus and blood, and ascites. The temperature is generally subnormal in the daytime (97° F.), rising to 101°–102° F. in the evening. The chills and fever usually occur during the early morning hours, the patients sleeping fairly well until after midnight. Then after the chill they are very restless, often unable to stay in bed until the fever subsides, as it generally does by six or seven o'clock in the morning. The appetite is good, but after meals there is apt to be great discomfort, with flatulence and frequently vomiting. The slightest dietary indiscretion may produce marked increase in these symptoms. The bowels are very irregular, sometimes constipated, but usually with diarrhoea. The stools vary somewhat in appearance and consistency, but are usually copious, brown, not frothy, sour smelling, with here and

there streaks of blood-stained mucus. The bulk of the stool is made up of undigested vegetable matter. Defecation is generally preceded by considerable abdominal pain. The spleen and liver are enlarged, the patient often complaining of "a lump in his side"; sometimes these organs are tender on pressure. The abdomen is filled with ascitic fluid.

A differential examination of the blood shows a most interesting leucocyte count. A fairly typical one is: count of 300 leucocytes; polymorphonuclears, 61 per cent.; large mononuclears, 15 per cent.; small mononuclears, 7.5 per cent.; eosinophiles, 16.5 per cent.

The patients affected by *Schistosomum japonicum* are almost all those whose work keeps them for long periods in the water—boatmen, raftsmen, and workers in the padi fields. These men are often standing for hours in water up to their waists, thus exposing large areas of skin to the water. People of other occupations are very rarely infected. The most probable supposition thus seems to be that infection occurs through the abraded skin. In China and Japan both, the fields are fertilized by human excreta to such an extent that travelling is often unpleasant because of the odor. These fields often drain into the rivers, which also become contaminated in other ways. Thus the opportunities are excellent for the transmission of a disease which is caused by a parasite, the ova of which are passed in the stools.

Having penetrated the skin, the embryos, carried first by the lymph and then by the blood stream, will finally reach the organs for which they have a special predilection, and there begin to grow steadily. Infection of the liver causes a cirrhotic condition of that organ, with consequent enlargement of the spleen, chronic gastric catarrh and dyspeptic symptoms, irregular diarrhoea, ascites, and general malnutrition. The remaining symptoms of the disease,—mucus and blood in the stools, disturbed sleep and night fever, eosinophilia, and of course the presence of the ova in the fæces,—may be regarded as the more direct effects produced by the parasite itself.

Treatment thus far has necessarily been mainly symptomatic. No line of treatment has yet been found which will expel the worm, and its life history is not yet known; so that the most important factor in treatment at the present stage of knowledge of the parasite and its habits seems to be of a prophylactic nature, warning the patient of the sources of infection, and seeking to guard him from a fresh invasion of the parasites.